"ACADEMIC ACHIEVEMENT OF SENIOR SECONDARY SCIENCE STUDENTS IN RELATION TO THEIR SCIENTIFIC CREATIVITY, EMOTIONAL INTELLIGENCE, ACHIEVEMENT MOTIVATION AND CERTAIN DEMOGRAPHIC VARIABLES."

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INTRODUCTION

Education is considered as an important index to measure societal development. This is the reason that education is taken as priority sector for development by all nations. Every nation develops the system of education to express and promote its unique socio-cultural identity and also to meet the challenges of the times. The role of educational development in mitigating several problems of the human society has been realized at all levels. School education is an important segment of the whole educational structure and it is considered as a powerful instrument to develop students' behavior and hence the society.

Aims and objectives of education have been greatly influenced through continuous change in science and technology. No doubt, the philosophy of life and need of the country play an important role in establishing the overall aims of education. The aims of the education which are to be achieved in the schools through formal teaching of a number of subjects including science. Earning livelihood should not be considered as the sole aim of education but to produce a balanced human being who will be able to face the increasing complexities of modern world with the courage and understanding. The most important period of training such a person is the period of schooling. In the age of science and technology the teaching of science has to be given an important place in the school education.

At present, India has developed as one of the strongest countries in the world in terms of scientific manpower in capability and maturity. We are in a position not only to know technologies that we may borrow but also to generate our own technologies with extensive scientific inputs of indigenous origin. Both, science and technology, now, perform as a significant contributor to the national development and social change.

In many nations, science and technology education are becoming increasingly identified as the background for economic stability and growth. In the past, in developed and developing countries, only the "brighter" students have been encouraged to pursue science knowledge.

Science has been viewed as knowledge accessible to only the elite few. Now, however, many countries are subscribing to the goal of "science for all." Science is increasingly being viewed as a subject of life-long utility to all students, whether or not they enter science-related careers. In the developing world, a more science literate populace is perceived as being better equipped to contribute to economic and societal development through informed decision-makings and such areas as: agricultural production, nutrition and health, land and resource management, population control and industrial growth.

Thus, whether science is to be taught to future scientists, or to future citizens, there is a pressing need to ensure that the secondary science teacher, whose role is so crucial (see below), has the educational background necessary to rise to both challenges. The issue is not that there are no well-prepared secondary science teachers. The issue is that the purposes of science education are changing, the content and its delivery are evolving, and the expectations for student achievement are rising. This is true for both developing and developed countries.

SECONDARY SCHOOL EDUCATION LEVEL IN INDIA

After independence, the pattern of the higher secondary education in India was influenced by the recommendations of University Education Commission, which regarded higher secondary education as very important, because it was the foundation of university education. Secondary Education Commission made valuable suggestions for the improvement and re-organization of secondary education and recommended the diversification of courses to meet varying aptitudes, interests and talents of the learners. The different states of India, therefore, introduced diversified courses at the secondary stage of education. The Education Commission recommended introduction of uniform structure of school and college education throughout the country. It also pointed out that secondary education is a complete unit by itself and that at the end of this stage the student should be in a position to, if he wishes, take up some useful vocation.

In this regard, Kulshrestha stated that the enlarged curriculum might create confusion in the mind of an immature child studying in class VIII, who is still young. Regarding the scheme of diversification of courses, Education Commission stated that one of the major weaknesses in the scheme is that specialization of studies begins too early. The streaming of pupils in this way is undesirable. The Commission further suggested that

secondary schools should admit the best students. At the higher secondary stage, the selections for admission have to be more rigorous.

In the light of changing societal needs and aspirations, certain high demand-driven areas are likely to have an impact on the school curriculum. It appears that, among other areas, language education, values education and information technology shall be matters of serious debate in the next cycle of curriculum renewal. Art education is also scheduled for reform in the next cycle of curriculum renewal.

SCIENCE EDUCATION

The speedy expansion of knowledge in different branches of science and its consequent impact on the daily life of people have set educationists of all the advanced countries to think about the position of science education in schools.

Science education is the field concerned with sharing science content and process with individuals not traditionally considered part of the scientific community. The target individuals may be children, college students, or adults within the general public. The field of science education comprises science content, some social science, and some teaching pedagogy. The standards for science education provide expectations for the development of understanding for students through the entire course of their K-12 education. The traditional subjects included in the standards are physical, life, earth, and space sciences.

Brownsky (1976), a well-known scholar explains science as the organization of our knowledge in such a way that it commands or makes possible the explanation of more of the hidden potential found in the individual and in the environment. So, the unique potentialities of the child should be preserved and enriched by science education.

REVIEW OF RELATED LITERATURE

Arora (1978) found that achievement in general science of IX class of boys and girls do not differ significantly. The achievement scores of students studying in private schools were higher in comparison to the students of govt. schools. The difference between the mean achievement scores in general science of boys and girls studying in govt. schools was same as the difference between the achievement of boys and girls studying in private schools.

Asha (1980) in her study suggested that the relation between creativity and academic achievement could be different for males and females. She

revealed that there was highly significantly relation between creativity and academic achievement of males. However her study shows less significant than that for males, also include for females.

Burstein (1980) found that males from high socio-economic-status families were positively associated with science achievement. Members of minority group were negatively associated with science achievement. Average science achievement of males was .288 SD higher than that of females. On average science achievement of boys benefitted more from the effects of emphasis on critical thinking.

Hirunval (1980) concluded that boys were more academically motivated than girls. Students in rural areas were more academically motivated than those in urban areas.

Chadha and Chandna (1990) investigated the correlation between creativity, intelligence and scholastic achievement. They reported a positive and significant co-relation between creativity and intelligence, creativity and scholastic achievement and intelligence and scholastic achievement. IQ correlated with creativity and scholastic achievement. There was a positive and significant correlation between intelligence and scholastic achievement, even when the effect of creativity was partially out, but and negative. A significant correlation was found between creativity and scholastic achievement, when the effect of intelligence was partially out.

Goleman (1995) found that Emotional Intelligence can predict academic success better than traditional measures of intelligence.

Rajnish (1998) conducted a study on Scientific Creativity of Traditional, Model and Navodaya School Students in relation to certain Psychological and Socio – Demographic Variables and reported that Intelligence correlates significantly and positively with both parts of scientific creativity in Traditional, Model and Navodaya Schools.

Farooq (2003) examined the effect of emotional intelligence on academic performance of 246 adolescent students and found that students with high emotional intelligence show better academic performance than the students with low emotional intelligence.

Fernandes and Rego (2004) found that EI is an important predictor of students' satisfaction with life, health and academic achievement.

The study conducted by Nelson and Low (2004) revealed the importance of emotional intelligence during transition period of high school graduates in the first year of college. They emphasized the importance of emotional intelligence skills as influencing variables in students' achievement and retention.

Parker, et al. (2004) found that Emotional Intelligence was a significant predictor of academic success, with the overall Emotional Intelligence predicting a significant percent of variability in the academic achievement (GPA) of high school students.

Jaiswal, V. (2007) conducted a study of scientific creativity and achievement motivation of grade X students of different Educational Boards and found that the achievement motivation has significant impact on scientific creativity of grade X students irrespective of their boards. It is also obvious that highly motivated students have more creativity in comparison to low motive students. It is also observed that there is no difference in scientific creativity and achievement motivation of X grade students of different Educational boards.

Abdullah (2006) also found that some dimensions of emotional intelligence significantly predict academic performance of college students.

A study conducted by Jaeger and Eagan (2007) revealed Interpersonal, Stress Management and adaptability scales of Bar On EQi as significant predictors of academic performance of students in the first year of university.

Singh and Pathania (2007) conducted a study of Academic Achievement and Achievement Motivation of students in relation to their locality, gender, social category and fathers' profession. The findings of the study revealed that there is no significant difference in academic achievement of students having high, average and low level of achievement motivation. Students coming from rural and urban did not differ significantly in their academic achievement. However, students of urban areas had higher mean of academic achievement scores than the students coming from rural areas. Furthermore, boys and girls do not differ significantly in their achievement motivation.

NEED AND SIGNIFICANCE

School education is an important segment of the total educational system contributing significantly to the individual as well as to national development. The primary concern of school is the imparting of academic skills. Academic achievement is the prime concern of psychologists, educators, learners as well as parents. Achievement in science is of key importance at the Senior Secondary School stage since it provides a base for higher studies which is inevitable for admission of various medical and engineering professions. So, achievement in science at this stage has to be scrutinized. Almost all recently generated science teaching strategies insist the importance of developing the creative talents of learners concerned. Therefore, the present study is undertaken to study the academic achievement of senior secondary science students in relation to their scientific creativity, emotional intelligence, achievement motivation and certain demographic variables.

STATEMENT OF THE PROBLEM

"Academic achievement of senior secondary science students in relation to their scientific creativity, emotional intelligence, achievement motivation and certain demographic variables"

OPERATIONAL DEFINITIONS OF THE KEY WORDS

Academic Achievement:

Academic achievement here refers to the marks obtained by the students in their annual examination in 10^{th} Class conducted by HPBSE.

Senior Secondary Science Students

Students who are studying in the class 10+1 in science stream.

Scientific Creativity:

Scientific creativity as a kind of intellectual trait or ability producing or potentially a certain product that is original and has social or personal value, designed with certain purpose in mind, using given information.

Emotional Intelligence:

Emotional intelligence here refers to Emotional intelligence is one's ability to deal successfully with other people and with one's feelings.

Achievement Motivation:

Achievement Motivation is a pattern of planning of actions and of feelings connected with hard efforts to achieve some internalized standards of excellence. Achievement results from actions directed to the attainment of a goal which the achiever usually perceives as a satisfying needs.

Demographic Variables

In the present study, only gender and area are taken as demographic variables.

Objectives of the study:-

The main objectives of the study will be:

1. To study whether academic achievement of the senior secondary science students has any relationship with their scientific creativity, emotional intelligence and achievement motivation.

2. To ascertain if such a relationships were found, which variables contributed most to the prediction of criterion variance.

3. To study whether senior secondary science students differ in their academic achievement, scientific creativity, emotional intelligence and achievement motivation, with respect to their gender (male/female) and background (rural/urban).

Hypotheses of the Study:-

The following hypotheses are formulated for the present study:-

1. Academic achievement and scientific creativity of senior secondary science students are significantly correlated with each other and in a multivariate analysis; scientific creativity contributes significantly to criterion variance.

2. Academic achievement and emotional intelligence of the senior secondary science students are significantly correlated to each other and in a multivariate analysis; emotional intelligence is a good predictor of criterion variance.

3. Academic achievement and achievement motivation of the senior secondary science students are significantly correlated

to each other and in a multivariate analysis; achievement motivation contributes significantly to criterion variance.

4. There is no significant difference in the academic achievement of senior secondary science students on the basis of their gender (male/female) and background (rural/urban).

5. There is no significant difference in the scientific creativity of the senior secondary science students on the basis of their gender (male/female) and background (rural/urban).

6. There is no significant difference in the emotional intelligence of the senior secondary science students on the basis of their gender (male/female) and background (rural/urban).

7. There is no significant difference in the achievement motivation of the senior secondary science students on the basis of their gender (male/female) and background (rural/urban).

Sample

For conducting the present study, three districts of Himachal Pradesh will be selected randomly out of Twelve Districts of Himachal Pradesh. From these three Districts 900 Senior Secondary Science Students will be selected randomly.

Variables of the Study

The study will be designed with Academic Achievement in Science as dependent variable and the following will be the independent variables: -

1). Scientific Creativity

2). Emotional Intelligence

3). Achievement Motivation.

Tools to be used

The investigator will use the following tools for the collection of data:-

1. Test of Scientific Creativity for Higher Secondary School Students developed by Dr. P.M. Jaleel and Rosamma Philip (2001).

2. Emotional Intelligence Inventory developed by Dr. S.K.Mangal and Mrs. Shubra Mangal (2006).

3. Achievement Motive Test developed by V.P. Bhargava (2007).

Statistical Techniques

The data will be analysed by using given statistical techniques such as mean, standard deviation, co-efficient of co-relation, 't'-test and MANOVA.

Delimitations

The study will be delimited only to Senior Secondary Science Students studying in Senior Secondary Schools of Himachal Pradesh. The study will be delimited only to a sample of 900 students selected randomly from three districts of Himachal Pradesh.

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